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PATENT
Docket No. TUC920030104US1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appellant:	Jean R. Chang et al.	
Serial No.:	10/648,064	
Filed:	August 26, 2003	
For:	**SYSTEM METHOD AND APPARATUS FOR OPTIMAL PERFORMANCE SCALING OF STORAGE MEDIA**	Group Art Unit: 2162
Examiner:	Dennis Y. Myint	

APPEAL BRIEF

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Examiner:

The USPTO received Appellant's timely Notice of Appeal on May 19, 2008, which was filed in response to the Final Office Action mailed February 21, 2008 (hereinafter OA080221). Appellant appeals the rejection of pending claims 1, 4, 5, 7, 10, and 12-24.

This Brief is being filed under the provisions of 37 C.F.R. § 41.37. This Brief is timely as the Brief is being filed within two months of the filing of the notice of appeal. The filing fee set forth in 37 C.F.R. § 41.20(b)(2) of $510.00 is submitted herewith. The Commissioner is hereby authorized to charge payment of any additional fees associated with this communication, or to credit any overpayment, to Deposit Account No. 09-0449.

1. REAL PARTY IN INTEREST

The real party in interest is the assignee, International Business Machines Corporation.

2. RELATED APPEALS AND INTERFERENCES

There are no related appeals, interferences, or judicial proceedings.

3. STATUS OF CLAIMS

The Office Action cites the following art: United States Patent Number 5,018,060 to Gelb et al. (hereinafter Gelb), United States Patent Number 5,757,571 to Basham et al. (hereinafter Basham), United States Patent Application Publication 2003/0193994 by Stickler (hereinafter Stickler), United States Patent Application Publication 2003/0204672 by Bergsten (hereinafter Bergsten), "Active Storage for Large-Scale Data Mining and Multimedia" Proceedings of the 24th VLDB Conference, New York, USA, 1998 by Erik Riedel et al. (hereinafter Riedel), United States Patent Application Publication 2003/0120379 by Mehlberg et al. (hereinafter Mehlberg).

Claims 1, 4, 5, 7, 10, and 12-24 are pending in the case. Claims 2, 3, 6, 8, 9, and 11 are canceled. Claims 1, 7, and 15 are independent claims. Claims 1, 4, 5, 15-21, and 23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Gelb in view of Basham and in further view of Stickler. Claims 7, 10, 12, and 22 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Gelb in view of Basham and Stickler and in further view of Bergsten. Claims 13 and 14 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Gelb in view of Basham, Stickler, and Bergsten and in further view of Riedel. Claim 24 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Gelb in view of Basham, Stickler, and Bergsten, and in further view of Mehlberg.

The claims remain rejected as set forth in the final rejection as noted in the Advisory Action of May 16, 2008. Appellant appeals the rejection of claims 1, 4, 5, 7, 10, and 12-24.

4. STATUS OF AMENDMENTS

Appellants submitted amendments in the response of April 21, 2008 to cure a first instance of a rejection under 35 U.S.C. § 101 that were not entered.

5. SUMMARY OF CLAIMED SUBJECT MATTER

The claimed subject matter deals with using magnetic tape scaling for applications that are not configured for storing data to magnetic tape with scaling. See published version of the application US Patent Application Publication 2005/0050055 (hereinafter '055) page 4, ¶ 40, 42.

The problem addressed is that many applications are not configured to store data to magnetic tape using scaling. See '055, page 1, ¶ 12. The present invention improves data access performance. See '055, page 2, ¶ 14. Specifically, the claimed invention provides for receiving a dataset for storage on a magnetic tape storage medium with a storage instruction that does not direct that the dataset is stored with scaling, selecting a scaling storage instruction, and communicating the selected scaling storage instruction to a storage controller. See '055, page 4, ¶ 40, 42; page 5, ¶ 52.

Embodiments of the present invention include an apparatus, a system, and a computer readable storage medium.[1] See e.g. claims 1, 7, and 15. Claim 1 presents an apparatus ('055, page 4, ¶ 43; fig. 2, ref. 120; fig. 3, ref. 120) for selecting storage media scaling to improve data access

[1] Although Appellant has summarized embodiments of the present invention, the present invention is defined by the claims themselves. Appellant's summary is not intended to limit the scope of the claims or individual claim elements

access performance (‘055, page 2, ¶ 14). The apparatus includes a reception module (‘055, page 4, ¶ 43; fig. 3, ref. 302) implemented in software stored on a memory device for execution on a processor (‘055, page 2, ¶ 28 – page 3, ¶ 30). The reception module is configured to receive a dataset for storage on a magnetic tape storage medium with a storage instruction that does not direct that the dataset is stored with scaling (‘055, page 4, ¶ 42, 43; page 5, ¶ 52; fig. 4, ref. 404).

The apparatus further includes an identification module (‘055, fig. 3, ref. 306) implemented in software stored on the memory device for execution on a processor (‘055, page 2, ¶ 28 – page 3, ¶ 30). The identification module is configured to identify storage characteristics of the dataset (‘055, page 4, ¶ 46; page 5, ¶ 52; fig. 4, ref. 406). The storage characteristics comprise compaction, expiration dates, and media interchange specifications (‘055, page 4, ¶ 39).

The apparatus also includes a scaling module (‘055, fig. 3, ref. 120, 307) implemented in software stored on the memory device for execution on a processor (‘055, page 2, ¶ 28 – page 3, ¶ 30). The scaling module is configured to select a scaling storage instruction in response to storage criteria applied to the storage characteristics that indicate scaling is beneficial (‘055, page 4, ¶ 49; page 5, ¶ 52-53; fig. 4, ref. 408, 410; fig. 5, ref. 508). The scaling module is further configured to communicate the selected scaling storage instruction to a storage controller (‘055, page 4, ¶ 42). The scaling storage instruction comprises an instruction to scale the magnetic tape storage medium to a predefined capacity for optimal data access performance (‘055, page 4, ¶ 47). The storage controller stores the dataset on a magnetic tape storage device in response to the scaling storage instruction (‘055, page 3, ¶ 33-34).

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in complying with the appeal brief requirements under 37 C.F.R. § 41.37(c)(v).

The following quotation of claim 1 includes reference numerals and parenthetical references to representative examples of the elements and components recited in claim 1 in compliance with 37 CFR 41.37(c)(1)(v).

1. An apparatus ('055, page 4, ¶ 43; fig. 2, ref. 120; fig. 3, ref. 120) for selecting storage media scaling to improve data access performance ('055, page 2, ¶ 14), the apparatus comprising:

> a reception module ('055, page 4, ¶ 43; fig. 3, ref. 302) implemented in software stored on a memory device for execution on a processor ('055, page 2, ¶ 28 – page 3, ¶ 30) and configured to receive a dataset for storage on a magnetic tape storage medium with a storage instruction that does not direct that the dataset is stored with scaling ('055, page 4, ¶ 42, 43; page 5, ¶ 52; fig. 4, ref. 404);
>
> an identification module ('055, fig. 3, ref. 306) implemented in software stored on the memory device_for execution on a processor ('055, page 2, ¶ 28 – page 3, ¶ 30) and configured to identify storage characteristics of the dataset ('055, page 4, ¶ 46; page 5, ¶ 52; fig. 4, ref. 406), wherein the storage characteristics comprise compaction, expiration dates, and media interchange specifications ('055, page 4, ¶ 39); and
>
> a scaling module ('055, fig. 3, ref. 120, 307) implemented in software stored on the memory device for execution on a processor ('055, page 2, ¶ 28 – page 3, ¶ 30) and configured to select a scaling storage instruction in response to storage criteria applied to the storage characteristics that indicate scaling is beneficial ('055, page 4, ¶ 49; page 5, ¶ 52-53; fig. 4, ref. 408, 410; fig. 5, ref. 508) and communicate the selected scaling storage instruction to a storage controller ('055, page 4, ¶ 42), wherein the scaling storage instruction comprises an instruction to scale the magnetic tape storage medium to a predefined capacity for optimal data access performance ('055, page 4, ¶ 47) and the

storage controller stores the dataset on a magnetic tape storage device in response to the scaling storage instruction ('055, page 3, ¶ 33-34).

Claim 7 presents a system for scaling a storage medium to improve data access performance ('055, page 3, ¶ 31, 37; fig. 1, ref. 100). The system includes a network configured to communicate data ('055, page 3, ¶ 31, fig. 1, ref. 108) and a storage controller coupled to the network ('055, page 3, ¶ 32-33; fig. 1, ref. 110). In addition, the system includes a magnetic tape storage device having a magnetic tape storage medium configured to store data received from the controller over the network ('055, page 3, ¶ 35; fig. 1, ref. 112).

The system further includes a host coupled to the network, the host configured to exchange data with the controller ('055, page 3, ¶ 36; fig. 1, ref. 106) and an application operating within the host ('055, page 3, ref. 38; fig. 1, ref. 122). The application is configured to produce a dataset to be stored on the magnetic tape storage medium with a storage instruction that does not direct that the dataset is stored with scaling ('055, page 3, ¶ 38; page 4, ¶ 42).

The system also includes an identification module ('055, fig. 3, ref. 306) implemented in software for execution on a processor ('055, page 2, ¶ 28 – page 3, ¶ 30). The identification module is configured to identify storage characteristics of the dataset that indicate scaling is beneficial ('055, page 4, ¶ 46; page 5, ¶ 52; fig. 4, ref. 406). The storage characteristics comprise compaction, expiration dates, and media interchange specifications ('055, page 4, ¶ 39).

The system further includes a scaling module ('055, fig. 3, ref. 120, 307) configured to communicate with the application and select a scaling storage instruction in response to storage criteria applied to storage characteristics of the dataset ('055, page 4, ¶ 49; page 5, ¶ 52-53; fig. 4, ref. 408, 410; fig. 5, ref. 508). The scaling module communicates the selected scaling storage

instruction to the storage controller ('055, page 4, ¶ 42). The scaling storage instruction comprises an instruction to scale the magnetic tape storage medium to a predefined capacity for optimal data access performance ('055, page 4, ¶ 47). The storage controller stores the dataset on the magnetic tape storage device in response to the scaling storage instruction ('055, page 3, ¶ 33-34).

The following quotation of claim 7 includes reference numerals and parenthetical references to representative examples of the elements and components recited in claim 7 in compliance with 37 CFR 41.37(c)(1)(v).

7. A system for scaling a storage medium to improve data access performance ('055, page 3, ¶ 31, 37; fig. 1, ref. 100), the system comprising:

a network configured to communicate data ('055, page 3, ¶ 31; fig. 1, ref. 108);

a storage controller coupled to the network ('055, page 3, ¶ 32-33; fig. 1, ref. 110);

a magnetic tape storage device having a magnetic tape storage medium configured to store data received from the controller over the network ('055, page 3, ¶ 35; fig. 1, ref. 112);

a host coupled to the network, the host configured to exchange data with the controller ('055, page 3, ¶ 36; fig. 1, ref. 106);

an application operating within the host ('055, page 3, ref. 38; fig. 1, ref. 122), the application configured to produce a dataset to be stored on the magnetic tape storage medium with a storage instruction that does not direct that the dataset is stored with scaling ('055, page 3, ¶ 38; page 4, ¶ 42);

an identification module ('055, fig. 3, ref. 306) implemented in software for execution on a processor ('055, page 2, ¶ 28 – page 3, ¶ 30) and configured to identify

storage characteristics of the dataset that indicate scaling is beneficial ('055, page 4, ¶ 46; page 5, ¶ 52; fig. 4, ref. 406), wherein the storage characteristics comprise compaction, expiration dates, and media interchange specifications ('055, page 4, ¶ 39); and

a scaling module ('055, fig. 3, ref. 120, 307) configured to communicate with the application and select a scaling storage instruction in response to storage criteria applied to storage characteristics of the dataset ('055, page 4, ¶ 49; page 5, ¶ 52-53; fig. 4, ref. 408, 410; fig. 5, ref. 508) and communicate the selected scaling storage instruction to the storage controller ('055, page 4, ¶ 42), wherein the scaling storage instruction comprises an instruction to scale the magnetic tape storage medium to a predefined capacity for optimal data access performance ('055, page 4, ¶ 47), and the storage controller stores the dataset on the magnetic tape storage device in response to the scaling storage instruction ('055, page 3, ¶ 33-34).

Claim 15 presents a computer readable storage medium comprising computer readable code ('055, page 2, ¶ 28 – page 3, ¶ 30). The computer readable medium is configured to carry out a method for selecting storage medium scaling to improve data access performance ('055, page 2, ¶ 14).

The method includes receiving a dataset to be stored on a magnetic tape storage medium with a storage instruction that does not direct that the dataset is stored with scaling ('055, page 4, ¶ 42, 43; page 5, ¶ 52; fig. 4, ref. 404).

The method further includes identifying storage characteristics of the dataset ('055, page 4, ¶ 46; page 5, ¶ 52; fig. 4, ref. 406). The storage characteristics comprise compaction, expiration dates, and media interchange specifications ('055, page 4, ¶ 39).

The method also includes determining based on storage criteria and the storage characteristics that indicate scaling is beneficial whether to scale the magnetic tape storage medium that will store the dataset ('055, page 4, ¶ 48; page 5, ¶ 52-53; fig. 4, ref. 408; fig. 5, ref.

508). In addition, the method includes selecting a scaling instruction to scale the magnetic tape storage medium to a predefined capacity for optimal data access performance according to the determination ('055, page 4, ¶ 49; page 5, ¶ 52-53; fig. 4, ref. 410; fig. 5, ref. 508). A storage controller stores the dataset on a magnetic tape storage device in response to the scaling instruction ('055, page 3, ¶ 33-34).

The following quotation of claim 15 includes reference numerals and parenthetical references to representative examples of the elements and components recited in claim 15 in compliance with 37 CFR 41.37(c)(1)(v).

15. A computer readable storage medium comprising computer readable code ('055, page 2, ¶ 28 – page 3, ¶ 30) configured to carry out a method for selecting storage medium scaling to improve data access performance ('055, page 2, ¶ 14), the method comprising:

receiving a dataset to be stored on a magnetic tape storage medium with a storage instruction that does not direct that the dataset is stored with scaling ('055, page 4, ¶ 42, 43; page 5, ¶ 52; fig. 4, ref. 404);

identifying storage characteristics of the dataset ('055, page 4, ¶ 46; page 5, ¶ 52; fig. 4, ref. 406), wherein the storage characteristics comprise compaction, expiration dates, and media interchange specifications ('055, page 4, ¶ 39);

determining based on storage criteria and the storage characteristics that indicate scaling is beneficial whether to scale the magnetic tape storage medium that will store the dataset ('055, page 4, ¶ 48; page 5, ¶ 52-53; fig. 4, ref. 408; fig. 5, ref. 508); and

selecting a scaling instruction to scale the magnetic tape storage medium to a predefined capacity for optimal data access performance according to the determination ('055, page 4, ¶ 49; page 5, ¶ 52-53; fig. 4, ref. 410; fig. 5, ref. 508), wherein a storage

controller stores the dataset on a magnetic tape storage device in response to the scaling instruction ('055, page 3, ¶ 33-34).

6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

I. Whether the Examiner properly rejected claims 1, 4, 5, 15-21, and 23 under 35 U.S.C. §103(a) as obvious in view of Gelb, Basham, and Stickler?

II. Whether the Examiner properly rejected claims 7, 10, 12, and 22 under 35 U.S.C. §103(a) as obvious in view of Gelb, Basham, Stickler, and Bergsten?

III. Whether the Examiner properly rejected claims 13 and 14 under 35 U.S.C. §103(a) as obvious in view of Gelb, Basham, Stickler, Bergsten, and Riedel?

IV. Whether the Examiner properly rejected claim 24 under 35 U.S.C. §103(a) as obvious in view of Gelb, Basham, Stickler, Bergsten, and Mehlberg?

7. ARGUMENT

I. <u>The rejection of claims 1, 4, 5, 15-21, and 23 under 35 U.S.C. §103(a) as obvious in view of Gelb, Basham, and Stickler is improper because Gelb, Basham, and Stickler fail to teach each element of claims 1, 4, 5, 15-21, and 23.</u>

Summary of the Examiner arguments

[001] The Examiner rejects claims 1, 4, 5, 15-21, and 23 under 35 U.S.C. § 103(a) as being unpatentable over Gelb in view of Basham and Stickler. The Examiner relies on Gelb for disclosing receiving a dataset for storage on a magnetic tape storage medium with a storage instruction that does not direct that the dataset is stored with scaling and Basham for selecting a storage instruction in response to storage criteria. In the Final Office Action of February 21, 2008 and Advisory Action of May 16, 2008, the Examiner indicates that the Appellants arguments are unpersuasive. The Examiner then responds to the Appellants arguments.

Response

[002] Appellants respectfully reaffirm the arguments raised against the rejection of claims 1, 4, 5, 15-21, and 23 under 35 USC §103(a) set forth in the response mailed April 21, 2008.

The legal requirements

It is well settled that the PTO has the burden to establish a *prima facie* case of obviousness. *In re Glaug*, 2002 U.S. App. Lexis 4246, *4 (Fed. Cir. March 15, 2002); MPEP §2142. "To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art." MPEP §2143.03.

The four factual inquires for determining obviousness are as follows:

(A) Determining the scope and contents of the prior art;

(B) Ascertaining the differences between the prior art and the claims in issue;

(C) Resolving the level of ordinary skill in the pertinent art; and

(D) Evaluating evidence of secondary considerations. MPEP § 2141 I.

Claim 1

[003] Claim 1 recites:

1. An apparatus for selecting storage media scaling to improve data access performance, the apparatus comprising:

a reception module implemented in software stored on a memory device for execution on a processor and configured to receive a dataset for storage on a magnetic tape storage medium **with a storage instruction that does not direct that the dataset is stored with scaling**;

an identification module implemented in software stored on the memory device_for execution on a processor and configured to identify storage characteristics of the dataset, wherein the storage characteristics comprise compaction, expiration dates, and media interchange specifications; and

a scaling module implemented in software stored on the memory device for execution on a processor and configured to **select a scaling storage instruction in response to storage criteria applied to the storage characteristics that indicate scaling is beneficial** and communicate the selected scaling storage instruction to a storage controller, wherein the scaling storage instruction comprises an instruction to scale the magnetic tape storage medium to a predefined capacity for optimal data access performance and the storage controller stores the dataset on a magnetic tape storage device in response to the scaling storage instruction.

[004] Appellants maintain the position that Gelb, Basham, and Stickler do not teach or disclose each element of claim 1. Claim 1 is representative of the rejected independent claim 15.

[005] In the response mailed April 21, 2008, Appellants argued that claims 1 included the

the limitations "…receive a dataset for storage on a magnetic tape storage medium **with a storage instruction that does not direct that the dataset is stored with scaling**…" and "…**select a scaling storage instruction in response to storage criteria applied to the storage characteristics that indicate scaling is beneficial** and communicate the selected scaling storage instruction to a storage controller, wherein the scaling storage instruction comprises an instruction to scale the magnetic tape storage medium to a predefined capacity for optimal data access performance and the storage controller stores the dataset on a magnetic tape storage device in response to the scaling storage instruction…" Claim 1. Thus the present invention claims selecting a scaling storage instruction in response to storage criteria applied to storage characteristics that indicate scaling is beneficial for a dataset received with a storage instruction that does not direct that the dataset is stored with scaling.

[006] The Examiner argues that Gelb's teaching of allocating a dataset to a non-SMS managed portion of the data processing system is analogous to receiving a dataset for storage on a magnetic tape storage medium with a storage instruction that does not direct that the dataset is stored with scaling. OA080221, page 4, lines 8-10; page 20, line 16 – page 21, line 13. The Examiner further cites Basham's teaching of storing data sets in scaled partitions as disclosing selecting a scaling instruction. OA080221, page 6, lines 18-21.

[007] Appellants submit that the combination of Gelb, Basham, Stickler, and also Bergsten does not disclose selecting a scaling storage instruction in response to storage criteria applied to storage characteristics that indicate scaling is beneficial for a dataset received with a storage instruction that does not direct that the dataset is stored with scaling. Gelb does teach selecting a storage class. Gelb, col. 18, lines 64 – col. 19, line 15; fig. 7, ref. 42. However, Gelb

does not teach selecting a scaling instruction in response to storage criteria applied to storage characteristics that indicate scaling is beneficial, to which the Examiner concurs. OA080221, page 6, lines 3-10.

[008] The Examiner relies on Basham for this limitation. OA080221, page 6, lines 11-18, citing Basham, col. 3, lines 58-61; col. 11, lines 25-30, col. 14, lines 38-43, col. 14, line 64 – col. 15, line 6, and col. 15, lines 16-39. In particular, the Examiner points out Basham's teaching of data being stored in variable-sized partitions and fixed-size partitions. OA080221, page 6, lines 18-22, citing Basham, col. 3, lines 58-61; col. 11, lines 25-30.

[009] Appellants respectfully disagree. The references cited by the Examiner teach various ways of establishing partition size for data that is to be stored with scaling, such as using variable-sized partitions or fixed-sized partitions. However, in none of the cited instances is a scaling instruction selected for a dataset received with a storage instruction that does not direct that the dataset is stored with scaling. All of the data received by Basham is already to be stored using scaling. There is no selection of scaling for a storage instruction that does not direct that the data is stored with scaling.

[010] Basham teaches away from selecting a scaling storage instruction in response to storage criteria applied to storage characteristics that indicate scaling is beneficial for a dataset received with a storage instruction that does not direct that the dataset is stored with scaling. Specifically, Basham teaches storage segments for scaling are that are defined prior to writing data to a magnetic tape. Basham, col. 2, lines 53-55. Thus scaling is imposed on all stored datasets rather than scaling commands being selected in response to storage criteria.

[011] In addition, Basham and Gelb do not teach **selecting a scaling storage instruction**

instruction in response to storage criteria applied to storage characteristics that indicate scaling is beneficial. Neither reference mentions storage criteria applied to storage characteristics that indicate that scaling is beneficial. Gelb is silent on characteristics that indicated that scaling is beneficial while Basham only discloses storage instructions that direct scaling as discussed above, and not selecting scaling in response to storage criteria applied to storage characteristics that indicate scaling is beneficial.

[012] Appellants therefore submit that Basham, Gelb, Stickler, and also Bergsten, Riedel, and Mehlberg do not teach all of the elements of the claimed invention. Claim 15 includes the limitation selecting a scaling storage instruction in response to storage criteria applied to storage characteristics that indicate scaling is beneficial for a dataset received with a storage instruction that does not direct that the dataset is stored with scaling discussed above in relation to claim 1. Therefore, claim 15 is allowable for at least the same reasons as claim 1. Claims 4, 5, 16-21 and 23 depend from claims 1 and 15 and are allowable for at least the same reasons as the independent claims.

II. <u>The rejection of claims 7, 10, 12, and 22 under 35 U.S.C. §103(a) as obvious in view of Gelb, Basham, Stickler, and Bergsten is improper because Gelb, Basham, Stickler, and Bergsten fail to teach each element of claims 7, 10, 12, and 22.</u>

Summary of the Examiner arguments

[013] The Examiner rejects claims 7, 10, 12, and 22 under 35 U.S.C. § 103(a) as being unpatentable over Gelb in view of Basham, Stickler, and Bergsten. As discussed above, the Examiner relies on Gelb for receiving a dataset for storage on a magnetic tape storage medium with a storage instruction that does not direct that the dataset is stored with scaling and Basham for

for selecting a storage instruction in response to storage criteria. The Examiner further relies on Bergsten for teaching a network.

Response

[014] Appellants respectfully reaffirm the arguments raised against the rejection of claims 7, 10, 12, and 22 under 35 USC §103(a) set forth in the response mailed April 21, 2008.

The legal requirements

It is well settled that the PTO has the burden to establish a *prima facie* case of obviousness. *In re Glaug*, 2002 U.S. App. Lexis 4246, *4 (Fed. Cir. March 15, 2002); MPEP §2142. "To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art." MPEP §2143.03.

The four factual inquires for determining obviousness are as follows:

(A) Determining the scope and contents of the prior art;

(B) Ascertaining the differences between the prior art and the claims in issue;

(C) Resolving the level of ordinary skill in the pertinent art; and

(D) Evaluating evidence of secondary considerations. MPEP § 2141 I.

Claim 7

[015] Claim 7 recites:

7. A system for scaling a storage medium to improve data access performance, the system comprising:

a network configured to communicate data;

a storage controller coupled to the network;

a magnetic tape storage device having a magnetic tape storage medium configured to store data received from the controller over the network;

a host coupled to the network, the host configured to exchange data with the controller;

an application operating within the host, the application configured to produce a dataset to

to be stored on the magnetic tape storage medium **with a storage instruction that does not direct that the dataset is stored with scaling;**

an identification module implemented in software for execution on a processor and configured to identify storage characteristics of the dataset that indicate scaling is beneficial, wherein the storage characteristics comprise compaction, expiration dates, and media interchange specifications; and

a scaling module configured to communicate with the application and **select a scaling storage instruction in response to storage criteria applied to storage characteristics of the dataset** and communicate the selected scaling storage instruction to the storage controller, wherein the scaling storage instruction comprises an instruction to scale the magnetic tape storage medium to a predefined capacity for optimal data access performance, and the storage controller stores the dataset on the magnetic tape storage device in response to the scaling storage instruction.

[016] Appellants maintain the position that Gelb, Basham, Stickler, and Bergsten do not teach each element of independent claim 7. As discussed above for claim 1, the combination of Gelb and Basham cited by the Examiner do not disclose selecting a scaling storage instruction in response to storage criteria applied to storage characteristics for a dataset received with a storage instruction that does not direct that the dataset is stored with scaling. The Examiner relies on Bergsten for the network of claim 7. However, Bergsten also does not teach selecting a scaling storage instruction in response to storage criteria applied to storage characteristics for a dataset

received with a storage instruction that does not direct that the dataset is stored with scaling. Appellants therefore submit that claim 7 is allowable, and that claims 10, 12, and 22 are allowable as depending from claim 7.

III. <u>The rejection of claims 13 and 14 under 35 U.S.C. §103(a) as obvious in view of Gelb, Basham, Stickler, Bergsten, and Riedel is improper because Gelb, Basham, Stickler, Bergsten, and Riedel fail to teach each element of claims 13 and 14.</u>

Summary of the Examiner arguments

[017] The Examiner rejects claims 13 and 14 under 35 U.S.C. § 103(a) as being unpatentable over Gelb in view of Basham, Stickler, Bergsten, and Riedel. As discussed above, the Examiner relies on Gelb for receiving a dataset for storage on a magnetic tape storage medium with a storage instruction that does not direct that the dataset is stored with scaling and Basham for selecting a storage instruction in response to storage criteria. The Examiner further relies on Riedel for a scaling module operating within a storage controller.

Response

[018] Appellants respectfully reaffirm the arguments raised against the rejection of claims 13 and 14 under 35 USC §103(a) set forth in the response mailed April 21, 2008, and submit that claims 13 and 14 are allowable as depending from allowable claim 7 as discussed above.

IV. <u>The rejection of claim 24 under 35 U.S.C. §103(a) as obvious in view of Gelb, Basham, Stickler, Bergsten, and Mehlberg is improper because Gelb, Basham, Stickler, Bergsten, and Mehlberg fail to teach each element of claim 24.</u>

Summary of the Examiner arguments

[019] The Examiner rejects claim 24 under 35 U.S.C. § 103(a) as being unpatentable over Gelb in view of Basham, Stickler, Bergsten, and Mehlberg. As discussed above, the Examiner relies on Gelb for receiving a dataset for storage on a magnetic tape storage medium with a storage instruction that does not direct that the dataset is stored with scaling and Basham for selecting a storage instruction in response to storage criteria. The Examiner further relies on Mehlberg for an accessor configured as a robotic arm.

Response

[020] Appellants respectfully reaffirm the arguments raised against the rejection of claim 24 under 35 USC §103(a) set forth in the response mailed April 21, 2008, and submit that claim 24 are allowable as depending from allowable claim 7 as discussed above.

SUMMARY

In view of the foregoing, Appellants respectfully assert that each of the claims on appeal has been improperly rejected because the rejections under 35 U.S.C. § §103(a) are improper. Therefore, Appellants respectfully request reversal of the Examiner's rejections under §103(a), and urges that pending claims 1, 4, 5, 7, 10, and 12-24 are ready for prompt allowance. Appellants appeal to the Board's objective and reasoned decision on this matter.

Respectfully submitted,

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Date: July 9, 2008

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8. CLAIMS APPENDIX

The claims involved in the appeal, namely claims 1, 4, 5, 7, 10, and 12-24, are listed below.

1. An apparatus for selecting storage media scaling to improve data access performance, the apparatus comprising:

a reception module implemented in software stored on a memory device for execution on a processor and configured to receive a dataset for storage on a magnetic tape storage medium with a storage instruction that does not direct that the dataset is stored with scaling;

an identification module implemented in software stored on the memory device_for execution on a processor and configured to identify storage characteristics of the dataset, wherein the storage characteristics comprise compaction, expiration dates, and media interchange specifications; and

a scaling module implemented in software stored on the memory device for execution on a processor and configured to select a scaling storage instruction in response to storage criteria applied to the storage characteristics that indicate scaling is beneficial and communicate the selected scaling storage instruction to a storage controller, wherein the scaling storage instruction comprises an instruction to scale the magnetic tape storage medium to a predefined capacity for optimal data access performance and the storage controller stores the dataset on a magnetic tape storage device in response to the scaling storage instruction.

4. The apparatus of claim 1, further comprising a determination module implemented in software

for execution on a processor and configured to store a plurality of predefined storage criteria and compare the storage characteristics of the received dataset with the predefined storage criteria to determine the storage instruction.

5. The apparatus of claim 1, further comprising a mapping module implemented in software for execution on a processor and configured to track capacity information for the magnetic tape storage medium that stores the dataset.

7. A system for scaling a storage medium to improve data access performance, the system comprising:

a network configured to communicate data;

a storage controller coupled to the network;

a magnetic tape storage device having a magnetic tape storage medium configured to store data received from the controller over the network;

a host coupled to the network, the host configured to exchange data with the controller;

an application operating within the host, the application configured to produce a dataset to be stored on the magnetic tape storage medium with a storage instruction that does not direct that the dataset is stored with scaling;

an identification module implemented in software for execution on a processor and configured to identify storage characteristics of the dataset that indicate scaling is beneficial, wherein the storage characteristics comprise compaction, expiration dates, and media interchange specifications; and

a scaling module configured to communicate with the application and select a scaling storage instruction in response to storage criteria applied to storage characteristics of the dataset and communicate the selected scaling storage instruction to the storage controller, wherein the scaling storage instruction comprises an instruction to scale the magnetic tape storage medium to a predefined capacity for optimal data access performance, and the storage controller stores the dataset on the magnetic tape storage device in response to the scaling storage instruction.

10. The system of claim 7, wherein the scaling module is configured to store a plurality of predefined storage criteria and compare the storage characteristics of the dataset with the predefined storage criteria to determine the storage instruction.

12. The system of claim 7, wherein the scaling module operates within the host.

13. The system of claim 7, wherein the scaling module operates within the storage controller.

14. The system of claim 7, wherein the scaling module operates within the magnetic tape storage device.

15. A computer readable storage medium comprising computer readable code configured to carry out a method for selecting storage medium scaling to improve data access performance, the method comprising:

receiving a dataset to be stored on a magnetic tape storage medium with a storage instruction that does not direct that the dataset is stored with scaling;

identifying storage characteristics of the dataset, wherein the storage characteristics comprise compaction, expiration dates, and media interchange specifications;

determining based on storage criteria and the storage characteristics that indicate scaling is beneficial whether to scale the magnetic tape storage medium that will store the dataset; and

selecting a scaling instruction to scale the magnetic tape storage medium to a predefined capacity for optimal data access performance according to the determination, wherein a storage controller stores the dataset on a magnetic tape storage device in response to the scaling instruction.

16. The computer readable storage medium of claim 15, wherein the method further comprises defining a plurality of storage characteristics as storage characteristics that require storage on optimally scaled magnetic tape storage medium.

17. The computer readable storage medium of claim 15, wherein the method further comprises defining a plurality of storage characteristics as storage characteristics that require storage on maximum capacity magnetic tape storage medium.

18. The computer readable storage medium of claim 15, wherein determining further comprises identifying storage characteristics that satisfy storage criteria for storing the dataset on optimally

scaled magnetic tape storage medium.

19. The computer readable storage medium of claim 15, wherein determining further comprises identifying storage characteristics that satisfy storage criteria for storing the dataset on maximum capacity magnetic tape storage medium.

20. The computer readable storage medium of claim 15, wherein the method further comprises tracking capacity information for the magnetic tape storage medium that stores the dataset.

21. The apparatus of claim 1, wherein the scaling module is further configured to select the scaling storage instruction using a pre-defined look-up table containing a plurality of datasets that determine whether the received dataset is to be scaled.

22. The system of claim 7, wherein the scaling module is further configured to select the scaling storage instruction using a pre-defined look-up table containing a plurality of datasets that determine whether the received dataset is to be scaled.

23. The method of claim 15, wherein a pre-defined look-up table containing a plurality of datasets determines whether the received dataset is to be scaled.

24. The system of claim 7, the system further comprising an accessor configured as a robotic arm with a cartridge gripper and a bar code scanner mounted on the cartridge gripper, wherein the accessor transports the magnetic tape storage medium to the magnetic tape storage device.

9. EVIDENCE APPENDIX

There is no material to be included in the Evidence Appendix.

10. RELATED PROCEEDINGS APPENDIX

There is no material to be included in the Related Proceedings Appendix.